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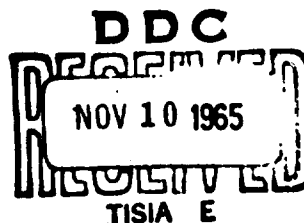
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SOVIET CHEMICAL AND BIOLOGICAL RESEARCH

Compilation of Abstracts From  
Soviet-Bloc Literature

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#### FOREWORD

This report was prepared in response to AID Work Assignment No. 50-A. It consists of twenty (20) abstracts requested by contractors of entries from AID Bibliography B-63-52. The bracketed numbers for each abstract refer to the original entry in the bibliography. Other requested abstracts will be published at irregular intervals.

[1]

ABC's of the Pentagon

Nauchno-tekhnicheskoye obshchestvo SSSR (NTO), 4 (2): 56-57, 1962

The article is a summary of a paper published in "Wiessin und Leben," no. 10, 1961, GDR. The German original implies that the Pentagon's ABC stands for atomic, bacteriological, and chemical warfare. It states further that "U.S. imperialism" is ready to unleash a global catastrophe and would not hesitate to use bacteriological weapons again as it has "already done in Korea."

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[5]

Timakov, V. D.

Variability of Microorganisms and Bacteriophagy

Moskva, Medgiz, 1960. 378 p.

The book is a symposium of papers presented during a conference on the variability of microorganisms and bacteriophagy, held in Moscow on 19-20 Nov. 1958. The symposium was divided into five parts. Part 1 dealt with general aspects of intestinal bacteria, staphylococci, Brucella, Pasteurellae, Clostridia, rickettsia, viruses, and Leptospirae. Part 2 was devoted to questions of bacterial structure and classification, and filtrable and L-form bacteria. Part 3 dealt with material on clinical epidemiological questions of infectious diseases. Part 4 was concerned with data on live vaccines and their immunological properties. Part 5 dealt with genetic and radiation methods in bacteriophagy.

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[6]  
Achievements of Soviet Microbiology

Isdatel'stvo ANSSR (Moskva), 1959. 128 p. (Russian translation is available: Consultants Bureau, 227 West 17th St., New York, 11, N. Y. 12.50)

This book is a collection of essays by A. A. Imshenetskiy, S. I. Kuznetsov, V. N. Shaposhnikov, and E. N. Mishustin concerning the history and development of Russian microbiology. Chapter I, (A. A. Imshenetskiy) is devoted to a discussion of the following topics: morphology and life cycles of microorganisms, cytology, cell physiology, systematics, species variability ecology, chemistry of microorganisms, growth and development, nutrition, fermentation processes, chemo- and photosynthesis, heterotrophic assimilation, enzymes, carbon and nitrogen cycles, cycles of Sulfur, Iron, Calcium and trace elements, and radiation effects. Chapter 2 (S. I. Kuznetsov) discusses the geological significance of microorganisms. Topics of interest are: geological role of microorganisms and the carbon, sulfur, iron, and calcium cycles. Chapter 3 (V. N. Shaposhnikov) is devoted to industrial microbiology. Chapter 4

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(E. N. Mishustin) presents a review of soil microbiology. An extensive bibliography accompanies each chapter.

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[7]

Aleksandrov, N. I., and N. Ye. Geffen

Aerosol Immunization with Desiccated Live Vaccines and Anatoxins.  
Communication I.

Zhurnal mikrobiologii, epidemiologii i immunobiologii 31(6): 7-11,  
1960.

There is a real danger that standard inoculation and vaccination methods may lead to viral infections of a serious epidemiological nature. Because of the above assumption, the author and his co-workers for the past six years have been engaged in an extensive study of aerosol immunization techniques. The experimental data, to be published in subsequent communications, indicate that aerosol immunization methods are highly effective and reliable, thus warranting their mass employment in the immunization practice.

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[8]

Aleksandrov, N. I., et al

Search for Effective Chemical Vaccines Against Certain Zoonoses.  
Communication I. Preparation of Anthrax Chemical Vaccine and Study  
of its Efficacy in Animal Experiments.

Zhurnal mikrobiologii, epidemiologii i immunobiologii 32(5): 42-46,  
1961

*B. anthracis* (STi-1, Kaluga biofactory) was cultured in a lipid-free milk medium containing glucose and inorganic salts. The culture was kept at 37°C for 20 to 24 hours, thereafter the excess proteins were precipitated. The antigen was precipitated from the supernate by the addition of 0.1% aluminum-potassium alum (at pH 5.9.), and then centrifuged and desiccated. Mice injected with anthrax antigen showed no adverse reactions and survived subsequent infection with the anthrax spores.

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[9]  
Aleksandrov, N. I., et al

Aerosol Immunization With Desiccated Live Vaccines and Anatoxins.  
Communication IV. The Characteristics and Dynamics of the Vaccination Process During Aerosol Immunization With Desiccated Brucellosis, Tularemia, Anthrax, and Plague Vaccines.

Zhurnal mikrobiologii, epidemiologii i immunobiologii, 31(12):  
33-44, 1960.

A total of 428 guinea pigs, 60 sheep, and 14 monkeys were exposed to aerosols containing desiccated vaccine strains of brucellosis BA-19, tularemia No. 15, Gaiskii, anthrax STi-1 and No. 3, plague 1-17 and EV. In general, the immunogenesis in test animals exposed to aerosols was analogous to the processes observed during dermal vaccination. However, during aerosol immunization the following noteworthy features were noted: the microorganisms were able to effect their entry into an organism through the conjunctiva, respiratory system, and the digestive tract. This mechanism led to a considerable involvement of the appropriate lymph nodes.

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[10]  
Aleksandrov, N. I., et al

Aerosol Immunization With Desiccated Live Vaccines and Anatoxins.  
Communication VI. Study of Post-vaccination and Immunization Effects in Man During Aerosol Immunization With Desiccated Brucellosis, Tularemia, Anthrax, and Plague Vaccines.

Zhurnal mikrobiologii, epidemiologii i immunobiologii, 32(7):  
56-62, 1961

A total of 2193 volunteers were exposed to aerosols containing desiccated live vaccines; of this total 625 men were vaccinated against brucellosis, 159 against tularemia, 1552 against anthrax, and 78 against plague. The optimal vaccination dosages for the above test groups were 250--800 million brucella (Br. abortus 19-BA), 20--200 million tularemia bacteria, 440--600 millions anthrax spores, and 100--150 million plague microbes, respectively. No adverse clinical symptoms were observed in the test subjects. All volunteers developed adequate immunity without significant clinical manifestations of post-vaccination reactions.

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[11]

Aleksandrov, N. I., et al

Aerosol Immunization With Desiccated Live Vaccines and Anatoxins.  
Communication VII. On the Organization, Methods, and Techniques of  
Mass Aerosol Immunization of Man With Desiccated Vaccines

Zhurnal mikrobiologii, epidemiologii i immunobiologii 32(9): 3-7,  
1961

Aerosol immunization can be accomplished in any room (5 to 160 m<sup>3</sup>) which can accommodate up to 200 subjects. There is no need for the determination of bacterial aerosol concentrations during actual vaccination, since such determinations could be made by using the tables compiled by the authors and the biological indices of the vaccines to be used. Two tables, listing optimal conditions for aerosol immunization with anthrax and tularemia vaccines in rooms of different sizes, are also included in the article.

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[12]

Aleksandrov, N. I., et al

Aerosol Immunization With Desiccated Live Vaccines and Anatoxins.  
Communication III

Zhurnal mikrobiologii, epidemiologii i immunobiologii 31(10): 44-49,  
1960

Guinea pigs, monkeys, sheep, and rabbits were exposed to aerosols containing desiccated live vaccines of anthrax STi-1 and No. 3; brucellosis Rr. abortus bovis No. 19/VA; tularemia No. 15, and plague 1 and 17. Controls received dermal inoculations with corresponding vaccines. Following aerosol immunization, the test animals developed adequate immunity qualitatively comparable to the immunity in the controls.

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[13]

Aleksandrov, N. I., et al

Aerogenic Immunization Against Some Zoonoses With a Combination of Desiccated Vaccines

Voyenno-meditsinskiy zhurnal, 12:65-70, 1960

As shown by experiments, aerogenic immunization is harmless and effective. Immunity in sheep and monkeys was established following vaccination with brucellosis-anthrax vaccine, while the addition to it of tularemia vaccine induced effective immunity in guinea pigs. Combined immunization with plague, brucellosis, tularemia, and anthrax vaccines was effective in all human subjects, although insignificant side effects were also noted.

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[15]

Aleksandrov, N. I., et al

The Search for Effective Chemical Vaccines Against Some Zoonoses. Communication II. Development of the Brucellous Chemical Vaccine and the Study of its Efficacy in Animal Experiments

Zhurnal mikrobiologii, epidemiologii i immunobiologii 32(11):66-72, 1961

Brucellous antigens were obtained after a 48-hour-long chloroform extraction from cultures of Br. abortus No. 19-BA and No. 104-M and Br. melitensis Yag-56. Intraperitoneal injection of mice with the antigens showed that the toxic dosages were about 2--4 mg, regardless of dilution used. Immunological data obtained after assay of serological and allergic reactions in mice, guinea pigs, and sheep indicated that following brucellous antigen administration an adequate immunological level was induced in test animals. Subsequent exposure of immunized animals to the virulent brucellous strains showed their high tolerance to the infection.

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[17]

Arslanova, A. Kh., et al

Experiments in the Application of Complex Vaccination With Chemical and Live Vaccines

Voyenno-meditsinskiy zhurnal (1):78-80 Jan 1960

Two groups of military personnel were simultaneously inoculated with the polyvalent vaccine NiiSi, plague vaccine, and the small-pox detritus. In Group I (120 men), the inoculations with the plague vaccine were made cutaneously, while Group 2 (140 men) was inoculated dermally. No significant local or generalized reactions were observed in Group 1, although subjects of Group 2 suffered from high temperatures (38-39.5°C), tenderness of the lymph nodes, and inflammation of the inoculation site for the periods of up to 3 days. It is concluded that dermal inoculation with the plague vaccine should not be used because of the adverse generalized reaction in all test subjects.

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[20]

Balabukha, V. S., editor

Chemical Protection of an Organism Against Ionizing Radiation

Atomizdat. Moskva. 1960, 151 p.

The book consists of two parts, with each part having a number of separate articles written by different authors. Part I deals with problems of chemical protection against radiation. It includes a general review of pertinent literature and supplies data on the laboratory synthesis and the biological role of aminothiols and pyrimidine derivatives. Part II deals with the elimination mechanisms of radioactive isotopes within biological systems. The effects of radioisotopes of Sr, Y, and Ce and their interaction with various compounds of blood and bone are also discussed.

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[25]  
Belikov, L. A.

Bacteriological Weapons and Countermeasures

Voyenizdat, Moskva, 1960, 197 p.

This easy-to-read exposition of the principles of bacteriological warfare is intended to impart fundamentals of bacteriology, virology, and sanitation to the layman. It discusses the following topics. 1) Bacteria, viruses, and rickettsia, development of bacteriology; and elementary epidemiology. 2) Essentials of bacteriological warfare. 3) Some infectious agents and their possible military applications. The agents listed are: plague, tularemia, melioidosis, brucellosis, cholera, botulism, murine typhus, Q fever, Rocky Mountain spotted fever, Sao Paulo typhus, bontonneuse fever; tick-borne fevers of Africa, Asia, and Australia; tsutsugamushi disease, smallpox, yellow fever, dengue fever, tick-borne St. Louis and Japanese encephalitis, Russian Far East encephalitis, equine encephalitis, influenza, ornithosis, and mycoses. This is followed by a brief discussion of clinical, etiological, and epidemiological

Card 1/2

aspects of each disease, supplemented by prophylactic recommendations. 4) The bacteriological countermeasures, which include passive defensive measures, sterilization methods, and neutralization of animal vectors with various insecticides and pesticides. 5) Prophylactic countermeasures against natural epidemics. 6) Active countermeasures against a bacteriological attack by an enemy.

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[27]

Beskovnnyy, L. G., ed

Russian Military Theory During the 19th and Beginning of the 20th Century

Moskva, Voenizdat, 1960, 757 p.

The editor presents chronologically selected passages and papers by 19th-century Russian military theoreticians. The papers deal with strategy, tactics, and related subjects and are based on experience gained in wars during the 19th century.

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[57]

Geffen, N. Ye., and G. Ya. Gordon

Aerosol Immunization With Desiccated Live Vaccines and Anatoxins. Communication V. Morphological Tissue Changes During Aerosol Immunization With Some Desiccated Vaccines

Zhurnal mikrobiologii, epidemiologii i immunobiologii, 32(1):40-46, 1961

Guinea pigs, sheep, and monkeys were exposed to aerosols containing live liquid or desiccated vaccines of brucellosis, tularemia, anthrax, and plague. Macroscopic examination of test animals 24 hours after immunization failed to reveal any changes, although histological studies of organs taken 7 to 25 days after exposure indicated a well-defined proliferation of reticulo-endothelial and lymphocytic elements in lungs and lymph nodes. These observations are regarded as conclusive only in respect to the brucellosis immunization effect.

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[120]

Levin, M. Ye., et al

Defense Against Weapons of Mass Destruction

Uchpedgiz, Moskva, 1960, 174 p.

This book is a compilation of basic information concerning the action of atomic, chemical, and bacteriological weapons. It consists of 14 chapters, and is intended for civil defense instructors. The following topics are discussed. 1) Methods of air attack; 2) Atomic weapons and their destructiveness; 3) Demolition, fragmentary, and incendiary bombs; 4) Chemical weapons; 5) Bacteriological weapons; 6) Methods of individual and mass protection; 6) Protection of food, forage, and water against contamination; 7) Function of the local air defense organization (MPVO) in apartment houses, offices, industrial enterprises, and collective farms. Procedures to be used in emergencies; 8) Determination of the extent of contamination, and rescue operations; 9) Fire fighting and prevention, decontamination practices, and the duties of civil defense teams.

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[127]

Lohs, K.

Defense Against Chemical Warfare Agents

Berlin, Verlag des Ministeriums des Innerr, 1961, 63 p.

This brochure is recommended as a reference and guide in civil defense matters, and is addressed to the public of the GDR. The following topics are discussed: individual and mass protection techniques; defense against nuclear explosions and radiation; organic and inorganic chemical combat agents and methods of their application; countermeasures and the decontamination of terrain, installations, and personnel.

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[153]  
Nikiforov, V. N.

Therapeutic Effects on the Extrusion Rates of the *Bacillus Anthracis* During Malignant Anthrax

Zhurnal mikrobiologii, epidemiologii i immunobiologii, 31(9)  
118-124, 1960

A total of 305 patients with malignant anthrax were treated as follows: 102 received antianthrax serum; 12 received sulfa drugs; 10 received penicillin; 167 received penicillin and antianthrax serum; 2 received penicillin, antianthrax serum, and 7 received streptomycin; biomyacin treatment; and 5 received no drugs at all. The *B. anthracis* were isolated from carbuncles in 187 cases, from feces in 8 cases, and in one instance, from wine. When multiple drug therapy was used the anthrax agent was extruded mainly during the first two days of treatment, although extrusion continued for longer periods during biomyacin therapy. It was observed further that the carbuncular extrusion rates were directly proportional to

Card 1/2

slough formation rates. *B. anthracis* persisted in the <sup>wine</sup> and feces of some of the patients for periods of up to 48 days in spite of the therapy.

Card 2/2

[212]

Supron, L. F., and F. P. Zverev

Medical Services During Employment of Mass Destruction Weapons

Minsk, Gosizdat BSSR, 1959, 407 p.

This book is intended to provide a study guide for physicians on the medical aspects of civil defense. It is based on lectures delivered by the authors at the Belorussian Institute for the Advanced Training of Physicians, in Minsk. The book has nine chapters and includes charts, diagrams, and illustrations. Chapter 1 is devoted to a description of Western (mainly US) offensive delivery systems and also includes a review of principles applicable during passive defense. Chapter 2 is an exposition of physical aspects of nuclear weapons and their destructive potential. The following topics are discussed: fundamental notions on the structure of matter; atoms and atomic nuclei; isotopes; nomenclature used in nuclear physics; matter and energy; nuclear energy; radioactivity and nuclear reactions; quantitative and qualitative aspects of nuclear transformations; interaction of matter and ionizing radia-

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tion; fusion and fission reactions; nuclear weapons and their destructiveness; design of nuclear warheads; radioactive combat agents; types of nuclear explosions and their destructive potential; and nuclear conversions and their effect upon explosive force. Chapter 3 discusses the following topics: acute radiation disease; chronic radiation disease; and organization of medical and within the system of local air defense organization. Chapter 4 discusses development of chemical weapons; general characteristics of offensive chemical weapons; chemical and clinical classifications of chemical weapons; toxic adsorption substances acting through the skin; asphyxiating, lacrimating, and sneezing agents; and phosphorus, technical fluid-, and various mixtures. Chapter 5 deals with the organizational principles of a local air defense system. Chapter 6 is concerned with the organizational principles, scope, and purpose of the medical branch of a local air defense organization (MFO). Chapter 7 deals with the fundamentals of defense against modern mass destruction weapons. Chapter 8 deals with radiation countermeasures during the employment of nuclear weapons; methods of radiation dosimetry; radiation detection equipment; radioactivity indicators; x-ray

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meters; radiation counters; radiation assay methods used by defense units and local air defense organizations to decontaminate stricken areas; organization of radiation departments within the laboratory system of the local air defense organization (MPVO), and functions of radiological laboratories, sanitation, and decontamination.

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